

transparent scales.

There is no justification for the use of any more than the two names—*brigitta* and *cinerea*—for this form of albinism in *jurtina*. However, if one wishes to be more specific about the superficial appearance of specimens of this kind, the synonym describing it most closely could be placed in parenthesis between the name of the form to which it belongs and its author—e.g. *brigitta (radiata)* Ljunch. It is quite possible that specimens showing both *brigitta* and *cinerea* tendencies will or have already been taken. These could be referred to as *brigitta-cinerea*.

p. 13 D. *Variation in the Apical Eyespot.*

The form *antirufa* Leeds (see *subhispulla* Strand) is a synonym for *nigro-rubra* Lmbll.

f. *ocellata* Tutt 1908, Ent. Rec., 20: 247.

=*infra-pupillata* Lempke.

f. *postexcessa* Leeds 1950, has one or more eyespots on the upperside hindwings.

## Rise and Decline of *Vanessa Io* in the Small Isles (Inner Hebrides)

By J. L. CAMPBELL

The interesting article by Mr. P. B. M. Allan on the decline of the Large Tortoiseshell (*V. polychloros*) in the December 1968 number of the *Record* set me thinking of another Vanessid which came to, and apparently has gone from, the district where I live in the Hebrides. I refer to the Peacock, *Vanessa Io*.

The first time I ever saw a Peacock in the Highlands, in a district where I had collected in the summer holidays as a boy between 1918 and 1924, was at Crinan in North Knapdale on the 26th of August 1935. It was a considerable surprise. Living on Canna since 1938, my first record of seeing this butterfly here was in early June 1939 (*Scottish Naturalist* 1939: 133). My records of the butterfly can be summarised as follows:

Year	Spring	Autumn
1939	1	—
1945	None (absent till April 26th)	5
1946	Not at home	—
1947	None, bad weather	Common
1948	Common	No record found
1949	None, cold wet spring	1
1950	—	None, very bad autumn
1951	—	1
1952	1	—
1953	1	—
1954	1	Absent after August 19th
1955	—	—
1956	—	1
1957	—	—
1958	—	—
		Absent July 23 to September 13
1959	2	One seen at Morar, September 13
1960	4	1
1961	—	3

The butterfly was certainly about in the autumn of 1948, as that was the year I found a large batch of larvae feeding on nettles near my house, and reared some of them, but I do not seem to have kept records

of the butterfly that summer, as it seemed to be well established.

September 20th, 1961, was the last time I saw a Peacock butterfly here. Since then no one who could recognise the species has seen one here, although 1966 and 1968 were eminently favourable seasons. The summers of 1961, 62 and 63 were very bad, and until 1968 the Small Tortoiseshell (*V. urticae*) itself had become very rare here. *V. io* has also gone from the neighbouring islands of Rum and Eigg. In Vol. 67, No. 5, of the *Record* Professor Heslop Harrison wrote that *io* had first been seen on the island of Rum in 1943 and was now (1955) firmly established there. Mr. Peter Wormell, the Warden of Rum, informs me that he has not seen a specimen there since September 1963. In Eigg, where I certainly remember seeing *io* in 1946 or 1947, Dr. H. McLean tells me that the last specimen he saw there was in the autumn of 1966.

Is the Peacock in a state of regression elsewhere in Scotland or the British Isles generally? It would be interesting to have the impressions of others amongst your readers.

## Insects and Motor Cars

By R. LAUNCELOT HARD

Whilst the exhaust gases of motor cars certainly form an unwelcome addition to industrial and other forms of pollution, I cannot believe that they act directly on insect populations in the way suggested by the author of "Death from the roads".

I see no reason why carbon monoxide (CO) should be of any harm to insects, even in concentrations quite a lot higher than those in question. In mammals, CO acts by forming a compound with the haemoglobin molecules of the blood in preference to oxygen. This leads to severe oxygen deficiency and death, as individual cells rely almost entirely on the blood stream for their oxygen requirements. The blood has no role in respiration in the majority of insects, indeed, it contains no haemoglobin or haemocyanin. The tracheal system ramifies so finely that a tracheal tube reaches most cells in the body. The oxygen can thus reach them by diffusion, and there is no need for a 'carrier' which is affected by carbon monoxide. It seems unlikely that any of the other components of exhaust gas could ever reach a high enough level in the atmosphere to kill or sterilise insects. They are simply not produced rapidly enough to accumulate before being diluted in vast quantities of air, as a result of air currents and diffusion. It is illogical to equate the extreme sensitivity many of the Lepidoptera have in the perception of scents with their sensitivity to the effects of the substances causing them. The former is centred in the antennae, the latter throughout the body, and they are totally unconnected anyway.

It is an undeniable fact that the verges of many roads are heavily polluted, and it does seem likely that lepidoptera may avoid laying eggs on polluted foodplants. Yet lepidopterous larvae can often be found on plants near heavily used roads: surely spraying and suburban-style cropping of the verges are more at fault.

What gases in exhaust are harmful to insects, and how could they affect areas where the decline in butterflies is as pronounced, but cars are few? Not by wind, as the concentrations would be too low. Influx of insects from affected areas would not harm a stable resident population, unless the immigrants had undergone some genetical change, which is unlikely to say